CLAIMS

I claim:

1. A method for wavelet-based seismic amplitude inversion, comprising:
selecting a seismic data set comprising a plurality of time samples;
selecting a plurality of time windows in the seismic data set; and
determining a reflectivity for each time window, using time samples within the time window.

2. The method of claim 1, wherein the step of selecting a plurality of time windows comprises:
selecting a plurality of time samples in the seismic data set; and
selecting a time window in the seismic data set around each time sample.

3. The method of claim 1, wherein the step of determining a reflectivity comprises:
selecting a reference time sample in the time window; and
determining a reflectivity for the reference time sample, using time samples within the time window.

4. The method of claim 3, wherein the step of determining a reflectivity comprises:
determining zero-offset reflectivities at all time samples in the time window;
selecting a sequence of time samples in the time window;
performing the following steps for each of the sequence of time samples:
calculating a ratio of zero-offset reflectivities at the reference time sample and the selected time sample; and
scaling the selected time sample by the ratio of zero-offset reflectivities; and
calculating a reflectivity for the time window, using the scaled time samples.

5. The method of claim 4, further comprising:

selecting a scaling up rejection factor;

selecting a scaling down rejection factor;

rejecting time samples that have a ratio of zero-offset reflectivities greater than the scaling up rejection factor; and

rejecting time samples that have a ratio of zero-offset reflectivities less than the scaling down rejection factor.

6. The method of claim 4, further comprising:

calculating a variance for the time window, using the scaled time samples.

7. The method of claim 3, wherein the step of determining a reflectivity comprises:

determining zero-offset reflectivities at all time samples in the time window;

selecting a sequence of time samples in the time window;

performing the following steps for each of the sequence of time samples:

calculating a ratio of zero-offset reflectivities at the reference time sample and the selected time sample; and

calculating a reflectivity curve for the time sample; and

scaling the time sample to the reflectivity curve by the ratio of zero-offset reflectivities; and

calculating a reflectivity for the time window, using the scaled time samples.

8. The method of claim 7, further comprising:

selecting a scaling up rejection factor;

selecting a scaling down rejection factor;

rejecting time samples that have a ratio of zero-offset reflectivities greater than the scaling up rejection factor; and

rejecting time samples that have a ratio of zero-offset reflectivities less than the scaling down rejection factor.

9. The method of claim 7, further comprising:

calculating a variance for the time window.

10. The method of claim 3, wherein the step of determining a reflectivity comprises:

determining zero-offset reflectivities at all time samples in the time window;

selecting a sequence of time samples in the time window;

performing the following steps for each of the sequence of time samples:

calculating a ratio of zero-offset reflectivities at the reference time sample and the selected time sample; and

calculating a parameterized reflectivity curve for the time sample; and

scaling the reflectivity curve parameters by the ratio of zero-offset reflectivities; and

calculating a reflectivity for the time window, using the scaled parameterized reflectivity curves.

11. The method of claim 10, further comprising:

selecting a scaling up rejection factor;

selecting a scaling down rejection factor;

rejecting time samples that have a ratio of zero-offset reflectivities greater than the scaling up rejection factor; and

rejecting time samples that have a ratio of zero-offset reflectivities less than the scaling down rejection factor.

12. The method of claim 10, further comprising:

calculating a variance for the time window.